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09/502,859	02/11/2000	Muneo Y. Ishikawa	IL-10391	5788

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EXAMINER

SOUW, BERNARD E.

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 03/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/502,859

Applicant(s)

ISHIKAWA ET AL.

Examiner

Bernard E Souw

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on January 14, 2003 (paper No. 8/a).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-27 and 29-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on 01/14/2003 (paper No. 6) is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

DETAILED ACTION

Amendment

1. The Amendment A, filed on 01/14/2003, Paper No.8/a, in response to the first Office Action mailed 06/19/2002 has been entered. The present Office Action is made with all the suggested amendments being fully considered.

However, the statement on pg.9/line 1 of the specification has been *incorrectly amended*. If **three** times standard deviation σ is required, as recited in the amended specification, then an instantaneous reading of $\sim(3 \cdot 2^N)^2 = 9 \cdot 2^{2N}$ is required, instead of only $\sim 3 \cdot 2^{2N}$ as recited in the amendment on pg.2/ll.4 from bottom. This is because the same accuracy $1/N^2$ is now required to be equal to $3\sigma/C=3/\sqrt{C}$, which then yields $C=(3 \cdot 2^N)^2$, as stated above.

Appropriate correction is obviously needed.

Affidavit / Declaration

2. An Affidavit or Declaration signed by J. L. Woods, one of the Inventors, filed under 37 CFR 1.132 in response to the first Office Action mailed 06/19/2002, has been received and entered as Paper No.5. The present Office Action is made with all the arguments of the Declaration being fully considered.

Examiner's Response to the Declaration

3. Applicant's arguments filed on 01/14/2003 (Declaration by one of the Inventors, J. L. Wood, paper # 5) have been fully considered, but a large majority is not persuasive. The following is Examiner's response to Applicant's arguments. This is grouped into four sections, i.e., regarding (a) objections to specification & claims, (b) rejections under 35 U.S.C. § 101 and § 112, (c) rejections under 35 U.S.C. § 102(b) as being anticipated over Kane et al. (USPAT # 4,571,492), and (d) rejections under 35 U.S.C. § 103(a) as being obvious over Kane et al. in view of secondary prior art(s).

(a) Specification & Claims

- Regarding item 3.d. (pg.3), the argument that no significant statistical fluctuations due to ink evaporation is accepted.
- Regarding item g. on pg.3, the argument that neutron activation poses no statistical impediments is accepted. The previous objection is herewith withdrawn.

(b) § 101 and § 112 Rejections

- Regarding item 9/a (claims 6 and 50), Wood's rebuttal refuses to admit the use of HR gamma detectors already suggested by the examiner in the first Office Action (maybe to avoid introducing New Matter). Such a refusal (represented by Applicants' following words "However, ... etc.") has rendered the Wood's rebuttal completely obscure, since the *specific* type of detector being used by Applicant to accomplish the task recited in the claim **remains** (or even becomes) **unclear and/or indefinite**. Consequently, the previous rejection under § 101 and § 112 must herewith be re-affirmed.

In order to obviate these § 101 and § 112 rejections, a definite type of detector has to be recited, either in the specification, or in the claims. To avoid an introduction of New Matter, an additional description of "well known in the art" after adding a specific example of such a detector would be appropriate. Without such a "well known in the art" declaration the introduction of the detector would constitute a New Matter.

However, by admitting that such types of detectors are well-known in the art, as already admitted by Applicants in the first line of Wood's item 9/a, there would be no valid justification as to why the use of such a well-known and conventional device (*as admitted by Wood*) for accomplishing a task commonly encountered in the art (*i.e., detecting radionuclides that are not practically detectable in the pertinent environment of the tag*), without any new or surprising result, would qualify as a patentable invention. As a way out, the examiner suggests to eliminate claims 6 and 50, or incorporate them in allowable claim(s). Another way out is, of course, abandoning the current application and submitting a new one with the detector specifically recited and technically described in close context to Applicant's invention, along with other features addressed in the following sections.

- Regarding item 9.c., claim 16 has been adequately amended to obviate the previous rejection, which is herewith withdrawn.
- Regarding item 9.d., claim 23, the wording --energy distribution induced upon the ion beam-- remains not understandable, especially in relation to claim 24. Insofar as the examiner can ascertain from Wood's Declaration (paper #5, pg. 3), it is the **kinetic** energy distribution of the ion beam which is meant, thus resulting in different

implantation depths, i.e., a distribution of implantation depths, associated to some sort of a 3-dimensional watermarking. Consequently, the relationship between the ion **kinetic** energy distribution, implantation depth and a 3-dimensional watermarking **must** be recited in the claim, in order to obviate this § 112 claim rejection.

However, Wood's Declaration (paper #5) contradicts the dependent claim 24 reciting said ion energy distribution being related to stopping power, the latter being conventionally referred to **gamma ray penetration depth due to gamma line energy** instead of *Wood's implantation depth distribution due to ion **kinetic** energy distribution*.

Until this contradiction is clarified, Wood's Declaration (paper #5) leads to a **new** § 112 rejection of claim 23.

■ Insofar as the examiner can ascertain from Wood's Declaration, a correct interpretation of claim 23 inevitably leads to a **new** § 112 rejection of claim 24, which contradicts its parent claim 23 with the term "**stopping power**". As is well known in the art, "**stopping power**" refers to the penetration depth of gamma rays, but not to the penetration depth of the ions, as correctly meant in claim 23. Appropriate correction is here required.

■ The previous rejection of claim 25 under § 101 based on non-statutory subject matter has not been responded to. Therefore, the previous rejection remains fully in force.

(c) § 102(b) Rejections

Since Wood's arguments regarding various claim rejections are repeated over the same issues, they will be responded to in groups, according to the standard Patent Examining practice and procedure.

Regarding § 102 rejections, it is important to note that Kane's invention pertains to "*a **method** to detect, identify, authenticate and date an article*" (see Kane's title), i.e., essentially the same as Applicants'. As such, Kane's is not restricted to any particular type of device (e.g., gamma detectors). Any device that can do the function or step recited in the claims and the disclosure (claims are to be interpreted in light of the specification) is legitimate. This condition sets forth to the present time, which includes the use of state-of-the-art devices. In this regard, Applicants' claims are **anticipated** by Kane's idea or concept, implemented today using state-of-the-art instruments, such anticipation being expressly recited in Col.12/II.4-16. The use of state-of-the-art devices is thus inherent in Kane's.

Note, Kane's invention pertains a method, in which the various embodiments are to be understood as examples only, as expressly recited in Col.12/II.4-16. Neither is Kane's idea or concept restricted to certain radionuclides only (see Col.7/II.13-14) but covers all of them (Col.6/II.7-9). Those few radionuclides recited by Kane are given only as examples, as expressly recited in Col.7/II.13-14. This means, using state-of-the-art measuring devices, Kane's idea or concept automatically, i.e., inherently, covers a lot more radionuclides than what were possible back then in 1982.

Therefore, to use a conventional state-of-the-art device to implement a previously known concept or idea without any new or unexpected or surprising result is already inherent in Kane's. Such inherency makes a § 102 rejection proper.

With regard to Applicants' other claims for which new efforts beyond Kane's anticipation are required, but where those efforts only involve routine skill in the art, those claims are rejected under § 103(a), with Kane et al. as a single reference. In the following, clear distinction between the two cases will be made.

Having the above interpretation of how-to-use-a-prior-art in mind, Wood's arguments will now be discussed, group by group, as follows.

General Allegation of Patentability

■ Wood's arguments on pg.4/¶1 and pg.5/¶1 fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Arguing Limitations That Are Not Claimed

■ In response to Wood's arguments on pg.5/¶2, pg.6/¶3, pg.7/¶1, pg.14/¶2&¶3, pg.23/¶3, pg.24/¶2, pg.25/¶2, it is noted that the limitations on which the Applicant relies, *inter alia*, "single parent", "Federal Regulations", "one-radioisotope-at-a-time", "shirt-pocket-sized radiation field-survey-type-detectors", etc., are not recited in Applicants' claims, neither is any of such terms ever used in examiner's claim

rejections. Therefore, it is irrelevant whether the reference includes those features or not.

- Wood's argument on pg.21/¶3&pg.22/¶1 is improperly addressed, since the subject matter being argued upon is not recited in the claims. The argument is thus irrelevant in context, so the previous rejections of claims 17 and 56 remain unaffected.

- Regarding pg.23/¶3, the argument does not refer to claims 30 and 47, but to the parent claims 10 & 15 and 45, respectively, which have been rejected somewhere else. The limitation "one-radioisotope-at-a-time" is not recited in any of the claims. The argument is therefore considered unpersuasive, and the corresponding claims unaffected.

Note, claim 13, which is the grand-grand-parent of claim 30/D29/D15, as well as claim 45, which is the parent of claim 47, both failing to include the limitation "one-radioisotope-at-a-time" recited on pg.23/¶3. Although this element is *indirectly* understood from the specification, it is not claimed explicitly. Nor were the words that are used in claims 13 & 45 defined in the specification to require these limitations. A reading of the specification provides no evidence to indicate that these limitations must be imported into claim 13 to give meaning to disputed terms

- Similar response is applicable to Wood's argument on pg.25/¶4 and pg.26/¶1. Claims 36, 44 and 61 failed to recite exactly the very important limitation that would have made it an allowable subject matter. See Examiner's Note (¶.8 of this Office Action) regarding § 102 rejection of claims 11 and 55.

Misunderstanding or Misinterpreting the Prior Art

- Wood's argument on pg.10/¶2 regarding the scope of Kane's invention is based on a misinterpretation of the prior art. Kane's invention is concerned not only with illicitly moved or transported items as alleged by Wood, but mainly with detecting, indentifying, authenticating and dating an article, which form together the scope of Kane's invention, as declared in the title, further detailed in Col.1 & 2, and expressly recited in Col.12/¶.4-16 and Col.1/¶.47-51. In these cases, the previous § 102 rejections are proper.
- Especially regarding Wood's pg.24/¶3, Kane's invention is indeed addressing radio-active tagging in general and --being an invention of a method-- indeed preempting a vast area of radioactive tagging within the scope of detecting, indentifying, authenticating and dating an article.
- Wood's argument on pg.10/¶2&¶3 regarding the activity limitation is based on Applicants' misunderstanding of the prior art. While the 1 μ Curie limit is itself less relevant, insofar as it always can be defined lower depending on the available device and the prevailing US regulations, as a matter of fact Kane's teaching also limits the activity to 0.5 μ Curie (Col.6/¶.22-26), i.e., even lower than Applicants' limit recited in claims 4 and 48, as already recited in the previous Office Action. A further limitation to nCurie level or lower does not make the claim patentable, insofar as it is enabled merely by virtue of state-of-the-art device that is not part of Applicants' invention. While the novel device is itself patentable, their mere applications for well-known purpose without new or unexpected result are not. In order to lend patentability, a particular application of such a device should produce a novel or unexpected outcome, i.e., beyond the scope

of any prior art of record. In these cases, § 103 rejections are more appropriate, although in many cases § 102 rejections are still proper, if the new and/or better result is inherently anticipated by the prior art.

■ In response to Wood's arguments on pg.19/¶1, alleging that Kane's Table II does not includes certain species claimed by Applicants, it is noted that Applicants' species are inherent to Kane's, as expressly recited in Col.7/ll.13-14. Therefore the previous § 102 rejection(s) is proper.

Attacking the Prior Art Inappropriately

■ In response to Wood's arguments on pg.4/¶1, pg.5/¶2&¶3, pg.6/¶1&¶2, pg.7/¶2, pg.14/¶2&¶3, alleging Kane's invention as being technically incorrect, Applicant should be more specific, in which column(s) & lines are Kane's teaching supposed to be incorrect. Especially Wood's allegation that Kane's teaching assumes and treats radioactive decays and detection thereof as deterministic process, has no basis whatsoever (please be specific with column & line numbers). Everyone of ordinary skill in the art, including Kane et al., understands that radioactive decay is a statistical process.

By all means, it is important to note, pointing out a *prior art teaching as incorrect* would not lend any patentability to Applicants' claim(s). In this case, Applicant is advised to submit a Request for Ex-Parte Reexamination of Kane's patent (USPAT # 4,571,492) according to **MPEP § 1.510**, which has nothing to do with the present examination process.

§1.510 Request for *ex parte* reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for an *ex parte* reexamination by the Office of any claim of the patent on the basis of prior art patents or printed publications cited under § 1.501. The request must be accompanied by the fee for requesting reexamination set in § 1.20(c)(1).

This also refers to similar allegations on pg.12/¶2&¶3 and pg.12/¶1.

■ Specifically regarding Applicants' call for examiner's attention made on pg.14/¶2&¶3, i.e., to contemplate over a possible *background as to why Kane has failed* to make certain *narrow* claims now being claimed by Applicants, does not belong to a patent examination process. The latter is only concerned with the fact that Kane's generally broad claims entirely cover a majority of Applicants' claims, as recited in the Office Action. That is sufficient as ground for rejections.

■ Specifically regarding Wood's allegation on pg.14/¶4 that Kane's invention is incomplete, it is well understood that it is not possible to include everything in a disclosure. As long as the missing issues are generally known to those *skilled in the art* (not just *ordinary* skill in the art), a single prior art can be used in a § 102 rejection based on inherency, or in a § 103 rejection based on obviousness, if the missing parts can be furnished by routine skill in the art.

■ Wood's arguments on pg.21/¶2, pg.22/¶2 and pg.23/¶1 regarding the word "*visible*" and "*visibly*" are purely semantic, and can thus be considered irrelevant. The previous § 102 rejections of claims 16, 19, 27, 39 and 40 are thus proper.

■ Regarding pg.22/¶2 & ¶3 and pg.23/¶1, a logos is understood as a 2-dimensional object, whereas a gamma-ray digital encoding, applied 2-dimensionally on a surface, is not patentably distinct from the same, applied 1-dimensionally. The previous § 102 rejections of claims 17 and 56 are therefore proper.

Allegation that Reference Patents are Old

- In response to Wood's arguments on pg.6/¶3, pg.8/¶3, based upon the age of the references, contentions that the reference patents are old and the teaching primitive and outmoded are not impressive, absent a showing that the art has *tried and failed* to solve the same problem notwithstanding its presumed knowledge of the references. *In re Neal*, 179 USPQ 56 (CCPA 1973).
- In response to pg.9/¶4, Wood's argument that "*Kane's did not have the **contemporary** technology base ..., and their basic approach ... is far more **primitive** ..., etc.*", does not lend any patentability to Applicants' claim(s), since inventing an "*old hat*" is principally not patentable.
- In response to pg.25/¶1, Wood's argument that Kane's tags is useless because they are too bulky and massive, is an improper judgment based on comparing with state-of-the-art devices resulting from technical progress. In this respect, inventing and "*old hat*", no matter how bulky and massive it was, is not an invention.

Routine Skill in the Art

- In response to Wood's arguments on pg.7/¶1, pg.8/¶2, pg.9/¶3, pg.11/¶1, pg.13/¶2, pg.14/¶2&¶3, pg.15/¶2, pg.16/¶3&¶4, the particular technique(s) as to how to generate distinctively different item-tags using state-of-the-art devices to implement Kane's concept of radioactive tagging for detecting, identifying, authenticating and dating an article, involves only routine skill in the art, and hence unpatentable. For these cases a § 103(a) rejection with Kane's as a single prior art is more appropriate rather than the § 102 rejections previously applied. The very absence of guidance in Kane's, as pointed out by Wood in pg.15/¶2, is a sound indication that all those practical

details of how to create practical tags based on conventional knowledge adopted from well-established digital encoding technique, substantially involve nothing else than routine skill in the art. Why should Kane et al. give any guidance if the subject matter is conventional and already well known in the art?

Especially regarding Wood's arguments on pg.9/¶3, peak-shape and source-detector geometry analyses are well-established analytic techniques generally known to one of ordinary skill in the art. Similarly, on pg.13/¶2 and pg.14/¶2, the practical details of how to create tags (in terms of binary bit-strings etc.) and their actual preparation are directly adopted from conventional and well-known digital encoding technique, which is not Applicants' invention.

The examiner has been having hard times, unfortunately without success, to justify why the application of such well-established and conventional techniques to implement a well-known concept or idea such as Kane's to satisfy a commonly encountered need under a well-known motivation as taught by Kane et al. should be regarded as a patentable invention, insofar as the latter must always comprise a novelty that is completely absent in this regard. At most, the examiner is ready to convert the previous § 102 rejections into a corresponding § 103 rejections, with Kane's as a single prior art.

In full contradiction to Wood's contention on pg.8/¶2, Kane's concept and idea might well be useless for one of insufficient knowledge and skill of the level of a student, but is very useful for one of ordinary skill in the art, because the latter would certainly be

able to implement Kane's concept and idea by means of his own skill and knowledge using available state-of-the-art devices.

General Knowledge in the Art

- In response to Wood's arguments on pg.7/¶2, the particular technique(s) how to implement Kane's teaching in a statistically valid manner might be too difficult and obscure to one of insufficient knowledge and skill at the level of a student, but not for one of ordinary skill in the art, who certainly would possess the knowledge as well as the know-how based on his own general knowledge in the art.
- In response to Wood's arguments on pg.19/¶3 & p.20/¶1, the criteria to collect and read the counts, the necessary energy resolution of the gamma spectrometer and the know-how to build a proper instrument, etc., are all well-known to one of ordinary skill in the art. Kane et al. do not even bother to explicitly recite them all in the disclosure, since most can be easily found in textbooks. Consequently, they are inherent in Kane's, and a § 102 rejection is therefore appropriate for the claim.
- Regarding arguments on pg.20/¶3 and pg.21/¶1, claims 13 and 15 recite, "... *in a pattern that can be determined with an appropriate detector-and-collimator arrangement ...*". It has been held that the recitation that an element is "**capable of**" performing a function, or in an equivalent passive voice, "*an element (pattern) **can be determined** ...*" is not a positive limitation but only requires the ability to so perform, or in the passive voice, being so treated. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

To make it a positive limitation, the phrase should be turned into "*in a pattern that is (or is to be) determined with an appropriate detector-and-collimator arrangement*". However, even in that positive affirmative form, the above limitation remains unpatentable, since a *detector-and-collimator arrangement* is not a subject matter of Applicants' invention, as evidenced by the lack of any technical detail of such an arrangement in the specification (*which must be novel, in order to be patentable!*).

The lack of any technical description in Applicants' disclosure about a *detector-and-collimator arrangement* is a tacit acknowledgement from the Applicants' side, conceding that such an arrangement is well known in the art, and conventionally also employed for accomplishing a function that is also well known, i.e., commonly encountered, in the art. Under this condition, the examiner is unable to find any valid justification, why a claim of using a device or arrangement well known in the art to accomplish an intended function also well known in the art should be valued as a patentable invention. In order to acquire patentability, such an application must evidently produce a new and/or unexpected result, i.e., beyond the scope envisioned or anticipated by any prior art of record. Consequently, claims 13 and 15 are to be properly rejected under § 103 with Kane's as a single prior art (or with a secondary prior art), instead of the previous § 102. Due to the lack of specific *detector-and-collimator arrangement*, secondary prior arts are given in the form of supports to Official Notice.

In addition, claims 13 and 15 are method claims, which include the use of a particular structure (*detector-and-collimator arrangement*). It has been held that to be entitled to weight in method claims, the recited structure limitations therein must affect

the method in a manipulative sense, and **not** to amount to the ***mere claiming of a use*** of a particular structure. *Ex parte Pfeiffer*, 1962 C.D. 408 (1961). There is no description whatsoever, neither in the claims nor in the specification, detailing such a manipulative difference. If the manipulative difference is well known in the art, why should a *mere use* of such a structure or such a method be patentable?

Intended Use

► In response to Wood's argument on pg.11/¶3 that Kane's invention is only or mainly concerned with the detection of unauthorized movement, it is noted that the language is only recited in the preamble of claim 1, which is not to be given a full patentable weight, but rather, must be interpreted in light of the specification. The latter clearly stated, the prior art invention is directed at detecting, indentifying, authenticating and dating an article, as declared in the title, further detailed in Col.1 & 2, and expressly recited in Col.12/¶.4-16 and Col.1/¶.47-51. Consequently, the previous § 102 rejections are proper. In an alternative § 103 rejection, the fact that Applicant uses a method for a different purpose does not alter the conclusion that its use in the prior art invention would be prima facie obvious from the purpose disclosed in the reference. *Ex parte Masham*, 2 USPQ2d 1647 (1987). In short, if the prior art method is capable of performing the intended use, then it meets the claim.

(d) § 103(a) Rejections (over Kane et al in view of secondary prior art(s))

■ Error-protection/correction coding techniques based on bit-redundancy have been known in the art for a long time, including Monastra's. While Monastra's error-protection coding, which is *only one of those* specifically comprising a Hamming error-syndrome, may itself very well be patentable, a mere application of this special coding to (solve) well-known situations (e.g., Kane's, as already recited in the previous Office Action) is not patentable, unless it produces a novel or unexpected result, because it needs only a routine skill in the art to make the combination between the two cited prior arts. Reasons and motivations for combining the prior arts are already given in the previous Office Action, and are not going to be repeated here.

Wood's argument that Monastra et al. dealt with bit-streams moving in *space*, whereas Applicants' invention deals with bit-strings moving in *time* is fully unacceptable, since the two are different perspectives of the same subject. One can equivalently say, Monastra's dealt with bit-strings moving in time, referring to the same subject matter, but merely changing one's perspective of view. This is because the word "moving" used by Wood, which is inherently referred to "speed", contains both parameters space and time in a mutually equivalent relationship as understood by human logic.

In response to Wood's argument on pg.29¶1, it is noted that Monastra's is neither anticipated nor rendered obvious by Hamming's, since Monastra et al. has used Hamming's to produce a new result, i.e., error-protection/correction coding.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 6 and 50 stand rejected under 35 U.S.C. 101 because the limitation that "at least one radioisotope comprises *radionuclides that are not practically detectable* in the pertinent environment of said tag" is essentially inoperative. Applicant's arguments (paper #5 and paper #8/a) failed to identify a specific reason, how those *not practically detectable radionuclides* can suddenly be made detectable.

Claims 6 and 50 stand also rejected under 35 USC 112, second paragraph (see next section).

5. Claim 25 stands rejected under 35 U.S.C. 101 because the limitations are directed to non-statutory subject matter. Information about the source, origin, ownership and/or history of an object are abstract ideas, which belong to non-statutory subject matter (see MPEP §706.03(a)).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 50 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6 and 50 recite the limitation that "at least one radioisotope comprises **radionuclides that are not practically detectable** in the pertinent environment of said tag" (which has been rejected under 35 USC 101 above). Claims 6 and 50 are also rejected under 35 USC § 112. It is well-known in the art that detection of a narrow gamma line having an intensity (much) below the overall (spectrally integrated) noise and/or background intensity level is very well possible by utilizing a spectrally resolving gamma detector to detect the narrow gamma line. Such a spectrally resolved measurement is not recited in claims 6 and 50, neither in the specification, the latter making only vague indications on page 6, lines 19-22 and on page 14 lines 6-7, however, without specifically identifying the use of narrow lines and high-resolution detectors to detect *radionuclides that are not practically detectable*.

Applicants are cautioned not to introduce New Matter upon obviating these rejections, especially because -- while not being particularly specified in the disclosure-- such detectors are indeed known in the art, as described in the following.

Examiner's Note: *Gamma detectors that do not need laboratory environment (hence, fieldable) but also capable of detecting narrow gamma lines by means of high spectral resolution, and therefore capable of detecting **radionuclides that are not practically detectable**, are known in the art, e.g., Cadmium-Zinc-Telluride (or CdZnTe, or CZT) gamma detectors.*

CZT detectors are known to operate at room temperatures, and thus, fieldable. This Official Notice is supported by Ruddy et al. (USPAT # 5,969,359) as recited in Col.4/II.24-35 and by Roscoe (USPAT # 5,528,495), as recited in Col.2/II.66-67 with

reference to spectral resolution shown in Fig.1 and in Col.3/II.3-7 with reference to spectral resolutions shown in Fig.2.

*CZT detectors are known in the art as having sufficient resolution for detecting **radionuclides that are not practically detectable**. This Official Notice is supported by Barrett et al. (USPAT # 5,825,033), as recited in Col.10/II.14-21 with reference to spectral resolution shown in Fig.9, in Col.9/II.24-29 with reference to spectral resolution shown in Fig.6, and in Col.9/II.60-67 with reference to spectral resolution shown in Fig.7 and Fig.8.*

7. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 23 recites an ion energy distribution, which, according to Wood's Declaration (paper #5), is to be interpreted as *ion **kinetic** energy distribution* causing a distribution of ion *implantation depths* in the target material (object). However, the dependent claim 24 indicates, it is not the distribution of *ion implantation depth* caused by ion **kinetic** energy distribution which is meant in claim 23, but instead, a distribution of *gamma ray penetration depth, conventionally known as stopping power, as caused by gamma line energy distribution*.

Appropriate correction is required.

8. Insofar the Examiner can ascertain from Wood's Declaration (paper #5) regarding the penetration depth of ion implantation due to ion energy distribution, claim

24 is rejected under 35 USC 112, second paragraph for reciting an inconsistent terminology "*stopping power*", which conventionally refers to gamma ray penetration depth, instead of ion implantation depth due to ion energy distribution, as understood from Wood's Declaration regarding claim 23.

While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947).

Appropriate correction is required.

9. Regarding claims 44 and 61, the wording of the (amended) claims are still not understandable to one of ordinary skill in the art, neither grammatically nor logically. The Examiner suggests to eliminate less relevant phrases to form a better understandable claim such as:

The method of claim 43 (60), wherein said signature comprises at least two blocks, and wherein the ordering of said code blocks is that the bit string decoded from the lowest-spectral-energy gamma-ray line being sequentially followed by the other code blocks in the order of increasing gamma-ray spectral-energy, one block per gamma-ray line, up to the code block corresponding to the highest spectral-energy gamma-ray line.

10. The following § 112 rejections are basically the same as in the previous Office Action. Those rejections are here repeated, with modifications and new additions marked up by underlines.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1 and 45 stand rejected under 35 U.S.C. 102(b) and 102(e) as being anticipated by Kane et al. (USPAT 4,571,492).

Kane et al. invent a method of tagging an object with a tag, wherein the method comprises affixing at least two radioisotopes to the object, as recited in Col.3/ll.63-68 and Col.4/ll.18-20, wherein the quantity of each radioisotope of the two or more radioisotopes is controlled to produce a controlled ratio of quantities of each radioisotope relative to the other, as recited in Col.4/ll.26-33 defining the isotope quantity as isotopic abundance, and in Col.7/ll.31-35 addressing the importance of ratio the ratio of these quantities, and wherein the controlled ratio encodes digital information within the tag which numeric content can be recovered over time-intervals, as recited in

Col.7/II.29-36, specifically addressing digital information in Col.7/II.39-41 and addressing information recovery over time-intervals in Col.7/II.29-68 and Col.8/II.1-11, specifically in the formula in Col.8/II.11, and further, the claim limitation "by use of appropriate detection apparatus" in Col.7/II.35-40, the latter automatically anticipates any state-of-the-art detection apparatus used in Applicant's invention.

12. Claims 2, 41-43, 46 and 58-60 stand rejected under 35 U.S.C. 102(b) and 102(e) as being anticipated by Kane et al.

The limitations that "at least one radioisotope is employed to encode the time-since-creation of the tag" (claims 2 and 46), "at least two radioisotopes are employed to encode the time-of-creation of the tag", and also "the intensity ratio of two radioisotopes of different half-lives is made to be *equal to unity* " (claims 41-43 and 58), and further limitations of claims 41-43 and 59-60, as well as "the observed ratio of line intensities constitutes a 'clock' whose 'elapsed time-reading' may be determined as precisely as desired simply by choosing how long to inspect the clock" (claims 41 and 58), are all encompassed in Kane's Col.7/II.29-68, especially in the formula given in Col.8/II.1-11. Regarding claims 59-60, the limitations that the age of the tag is determined by the fraction of the remaining radioactivities (claim 59), and particularly from their ratio translated back to the time of creation (claim 60), are also readily encompassed in Col.7/II.29-68 and Col.8/II.1-11.

13. Claims 3-4, 7-8, 11-12, 44, 47-48, 51-52, 55-56 and 61 stand rejected under 35 U.S.C. 102(b) and 102(e) as being anticipated by Kane et al.

► Regarding claim 3, the limitation that the tag is employed for the purpose of object identification, is recited by Kane et al. In Col.4/II.21-32.

► Regarding claims 4 and 48, the limitation that the quantity of each radioisotope does not exceed 1 microCurie at the time of creation, is disclosed by Kane et al. In Col.6/II.24-26. Furthermore, in anticipation that claim 29 would be modified to overcome the above objection under 35 CFR 1.75(s), the limitation that the amount is low level radioactivity is disclosed by Kane et al. in Col.3/II.35-40. Applicant's argument that Applicant's "1 microCurie" and/or "radioisotope mixture" are/is different than Kane's is not persuasive, because the argued limitations are not recited in claims 4 and 48 (see Response to Applicant's arguments).

► Regarding claims 7 and 51, the limitation that at least one radioisotope comprises a radionuclide in a specified amount to encode the numerical content of a binary bit-string is disclosed in Col.6/II.19-22, Col.7/II.6-16, and Col.7/II.35-38, whereby the limitation that the numerical content of the binary bit-string is inherently understood in digital recording recited in Col.7/II.38-40 and Col.8/II.42-45, as previously applied to claims 43 and 60. That the length of a binary bit-string is at least one bit, is a trivial limitation inherently understood in the definition of a bit-string.

► Regarding claims 8 and 52, the limitation that the tagged object comprises a material object essentially greater than microscopic scale is disclosed in Col.4/II.54-67,

Col.10/II.21-25, and Col.11/II.3-9. Regarding Applicant's general allegation that Applicant's material object is different than Kane's, it is noted that such difference is not recited in claims 8 and 52 (see Response to Applicant's arguments).

► Regarding claims 11 and 55, insofar as the Examiner can ascertain in the claims upon obviation of the above rejections of claims 11 and 55 under 35 USC § 112, 2nd paragraph, the limitation that the radionuclides are metered out from one or more solution-containing reservoir of an inkjet-type printing mechanism under algorithmic control, is disclosed in Col.9/II.59-68 and Col.10/II.1-4. In this regard, the limitation of dispensing the radioactive ink by a printing mechanism under algorithmic control (as opposed to manually) is an automation which is not patentable because it only involves routine skill in the art. *In re Venner*, 120 USPQ 192.

Examiner's Note: *It is not the automation introduced by using a printer cartridge to dispense the radioactive ink, which would possibly lend some patentability to the claim(s), but rather, the ability to write encoded message(s) and/or identification tag(s) in real time, using an ink-jet printing technique in the same manner as writing messages in real time using state-of-the-art computers, i.e., without previously preparing the radionuclides compositions individually.*

► Regarding claim 12, the limitation of controlling the detection of the tag and numeric content read-out processes with a digital computer-implemented algorithmic means is disclosed in Col.9/II.38-49.

- ▶ Regarding claims 44 and 61, insofar as the Examiner can ascertain in the claims upon obviation of the above rejections under 35 USC § 112, 2nd paragraph, the limitation that the ordering of the code blocks in the parent claims 43 and 60, respectively, is in an increasing order of gamma energy, is a mere matter of design choice. The ordering may be made in the reverse, i.e., decreasing order, or any other specific order, without giving any different result.
- ▶ Regarding claim 47, the limitation that the tagging method comprises (the step of) affixing the (radioactive) label to the object is disclosed in Col.9/II.59-62.
- ▶ Regarding claim 56, the limitation that the radionuclides emit penetrating high-energy gamma rays is disclosed in Table II in Col.8.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Regarding claims 6 and 50, insofar as the Examiner can ascertain in the claims upon obviation of the above rejections under 35 USC § 101 and § 112, 2nd paragraph, the use of narrow spectral lines as radioactive tags to ensure low radiation hazard to the environment is disclosed in Col.3/II.35-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a spectrally resolving gamma detector to detect narrow gamma lines in order to detect *radionuclides that are not practically detectable*, since it is well-known in the art that detection of a narrow gamma line having an intensity (much) below the overall (spectrally integrated) noise and/or background intensity level is very well possible.

Examiner's Note: Regarding Wood's Declaration (paper #5) claiming that Kane's does not use an (unspecified) HR gamma detector that does not require laboratory environment to operate, it is noted that such limitation is not recited in the claim(s), notwithstanding Applicant's failure for specifying any detector that would be capable of doing the job, which is, indeed well known in the art.

Gamma detectors that do not need laboratory environment (hence, fieldable) but also capable of detecting narrow gamma lines by means of high spectral resolution, and therefore capable of *detecting radionuclides that are not practically detectable*, are known in the art, e.g., Cadmium-Zinc-Telluride (or CdZnTe, or CZT) gamma detectors.

CZT detectors are known to operate at room temperatures, and thus, fieldable. This Official Notice is supported by Ruddy et al. (USPAT # 5,969,359) as recited in Col.4/II.24-35 and by Roscoe (USPAT # 5,528,495), as recited in Col.2/II.66-67 with reference to spectral resolution shown in Fig.1 and in Col.3/II.3-7 with reference to spectral resolutions shown in Fig.2.

CZT detectors are known in the art as having sufficient resolution for *detecting radionuclides that are not practically detectable*. This Official Notice is supported by

Barrett et al. (USPAT # 5,825,033), hereafter to be addressed as Barrett-033, as recited in Col.10/II.14-21 with reference to spectral resolution shown in Fig.9, in Col.9/II.24-29 with reference to spectral resolution shown in Fig.6, and in Col.9/II.60-67 with reference to spectral resolution shown in Fig.7 and Fig.8.

15. Claims 13-19, 27, 35-40 and (new claim) 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. as applied to claims 1 and 45 above, and further in view of Barrett et al. (USPAT # 6,392,235 B1), hereafter to be addressed as Barrett-235.

► Kane et al. show all the limitations of claim 13, as previously applied to claims 1 and 45, except the recitation of using an appropriate detector-and-collimator arrangement. While such a detector-collimator arrangement is not a subject matter of Applicant's invention, as evidenced by a complete absence of specific description in the disclosure, a detector-collimator arrangement is well known in the art, as shown by Barrett-235 in Fig.3 and recited in Col.3/II.4-14, which covers a broad variety of collimators that render obvious Applicant's unspecified detector-collimator arrangement.

Still regarding claim 13, Applicants' "relative mixture of radionuclides" is the same as Kane's ratio of radioisotope abundance disclosed in Col.7/II.40-44. Applicant's argument that Applicant's "relative mixture of radionuclides" is different than Kane's is not persuasive, since the specific limitation is not recited in claim 13 (see Response to Applicant's arguments).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose an appropriate detector-and-collimator arrangement as taught by Barrett-235 to use in Kane's apparatus, since such a device would significantly reduce the noise originating from gamma photon scattering.

Barrett's purpose of using a detector-collimator arrangement may be different than Applicant's. However, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ2d 1647 (1987).

► The limitation of claim 14 is the same as that of previously rejected claims 11 and 55, except for the dependence on parent claim 13 that has been rejected over Kane et al. in view of an additional prior art (Barret-235). Claim 14 is therefore rejected over the Kane et al. in view of Barrett-235 by the same reasons as previously applied to claims 11 and 55.

► Regarding claim 15, the limitation that the resulting watermark delivered by an ink-jet cartridge is visible to the detector-and-collimator arrangement is disclosed by Kane et al. in Col.2/ll.8-68 and continued to Col.3/ll.1-40.

► Regarding claim 16, insofar as the Examiner can ascertain in the claim upon obviation of the above rejections under 35 USC § 112, 2nd paragraph, the limitation that the radioactive tags are incorporated invisibly onto previously existing objects, is

disclosed by Kane et al. in the Abstract, lines 1-4 from the end/bottom, and in Col.2/II.27-32.

- ▶ Regarding claim 17, the limitation that the radionuclides emit penetrating high-energy gamma rays is disclosed by Kane et al. in Table II in Col.8.
- ▶ The limitation of claim 18 is the same as that of previously rejected claims 2, 41-43 and 46, except for the dependence on parent claim 13 that has been rejected over Kane et al. in view of an additional prior art, Barret-235. Claim 18 is therefore rejected over the Kane et al. in view of Barrett-235 by the same reasons as previously applied to claims 2, 41-43 and 46.
- ▶ Regarding claim 19, insofar as the Examiner can ascertain in the claim upon obviation of the above rejections under 35 USC § 112, 2nd paragraph, the limitation that the radioactive tag is created in the form of two dimensional logos visible **as** low energy gamma-ray watermarks is inherently understood in Kane's, as recited in Col.1/II.53-57 in conjunction with Col. 1/II.47-50.
- ▶ Regarding claims 27, 39 and 40, the limitation that the radioactive tag pattern comprises a bar-code is rejected on the same basis as that applied to claim 26 above, in the sense that a bar-code is essentially a two dimensional distribution.

Specifically regarding claim 40, the limitation that the bar code of claim 39 is invisible, is trivial, since it is generally known that gamma rays are invisible to the eye, whereas the amount of radioactive substance therefor needed is also minimum, so as to make the tag or bar code practically invisible, as recited by Kane et al in Col.11/II.3-5.

► Regarding claim 62 (new), the additional limitation of incorporating *low-level radioactive tags* into a label is essentially the same as making a tag containing *radionuclides that are not particularly detectable*, which is already rejected with claims 6 and 50 above, under § 103 over only a single prior art, Kane et al.. Consequently, claim 62 is now rejected by the same token over the same prior art as the parent claim 15, combined with that of claims 6 and 50, i.e., Kane et al. in view of Barrett-235.

► Claim 63 (new) is rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. as modified by Barrett et al., as applied previously to the rejected claim 16 above, except the recitation that the tagged object includes a work of art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to tag a work of art, e.g., with owner's logo, in order to serve as a proof of original ownership in case of a theft.

► Regarding claim 35, the limitation that the objects to be tagged comprise currency is disclosed by Kane et al. in Col.4/ll.54-67 and Col.10/ll.21-25; that they comprise documents (including computer output documents) is disclosed in Col.10/ll.59-68 and Col.11/ll.1-9.

► Regarding claim 36, the limitation that the method in parent/base claim 17 comprises determining the presence of tagged documents in a set of documents by detecting the penetrating high-energy gamma rays, is disclosed in Col.3/ll.25-31.

► Regarding claims 26, 37 and 38, the limitations that the radioactive tag is "encoded in a spatial distribution of each radionuclide relative to the other(s)" (claim 26),

"distributed throughout the tag" (claim 37), and "is placed in a limited area or volume of the tag" (claim 38), are mere arrangements of the constituents to make the tag two-dimensional. Where the instant specification and evidence of record fail to attribute any significance (novel or unexpected result) to a particular arrangement, the particular arrangement is deemed to have been a design consideration within skill of the art. *In re Kuhle*, 526 F.2d 553, 555, 188 USPQ 7; 9 (CCPA 1975).

16. Claims 5, 9, 49 and 53 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. as applied to claims 1 and 45 above, and further in view of Monastra et al.

► Regarding claims 5 and 49, Kane et al. disclose all the limitations of claims 5 and 49 as applied to the respective base claims 1 and 45 above, except the limitation of encoding some redundancy in the digital bit-string representation of the tag.

Monastra et al. disclose a digital bit-string representation of an N-bit information which further encodes a C-bit redundancy to form a N+C bit data string, as illustrated in Fig.1 and recited in Col.1/ll.28-36. Another example using a supernumerary bit redundancy $S=M-N$ is illustrated in Fig.3 and recited in Col.4/ll.23-47.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to encode some redundancy in the bit-string representation, in order to incorporate an error-(protection/correction) coding in the bit-string, as disclosed by Monastra et al. in Col.1/ll36-46. Such an error-protection/correction coding by

redundant bit data is a desirable option well known in the art, as recited by Monastra et al. in Col.1/II.46-49 because it improves the reliability of the system, as recited in Col.1/II.8-11.

► Regarding claims 9 and 53, Kane et al. disclose all the limitations of claims 9 and 53 as applied to the respective base claims 1, 5, 45 and 49 above, except the limitation that the redundancy comprises a Hamming error-syndrome. This limitation is disclosed by Monastra et al. in Col.1/II.36-37, reciting the redundant C-bits are used for error detection and correction (EDAC) coding, which is further specified as being associated with the Hamming error-syndrome, as disclosed in Col.11/II.42-44.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the Hamming error-syndrome as a bit-error detection code, since said code is one of the simplest in the art and also well suited for use with linear bit-strings.

17. Insofar as the Examiner can ascertain in the claims upon obviation of the above rejections under 35 USC § 112, 2nd paragraph, claims 10, 29-34, 54 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. as applied to the parent/base claims 1 and 45 above, and further in view of Westinghouse Savannah River Company website publication and/or Bostick et al.

► Kane et al. show all the limitations of claims 10, 29-34, 54 and 57, as previously applied to the parent/base claims 1 and 45, including the limitation that at least one

radioisotope comprises radionuclides that is (are) carried in a variety of substances found in inking materials, as recited in Col.9/II.63-68 and Col.10/II.1-13. However, although beads are conventionally used as inking materials, Kane's group of substances does not include a bead of an *ion-exchange* or *zeolite* variety.

Westinghouse's website document recites the use of a zeolite resin as an ion-exchange substance to absorb a variety of radioactive substances, as recited on pg.1/II.1-3. The fact that Westinghouse has absorbed the radionuclides in zeolite for a different purpose does not alter the conclusion that Applicant's use of zeolite to absorb radionuclides would be *prima facie* obvious from the purpose disclosed in the Westinghouse reference. *In re Lintner*, 173 USPQ 560.

In the alternative, Bostick et al. also used zeolite as ion-exchange material to absorb radionuclides to absorb a variety of radioactive substances, as recited on pg.2/II.18-24. The fact that Bostick et al. has absorbed the radionuclides in zeolite for a different purpose does not alter the conclusion that Applicant's use of zeolite to absorb radionuclides would be *prima facie* obvious from the purpose disclosed in the Bostick reference. *In re Lintner*, 173 USPQ 560.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use beads of Westinghouse's or Bostick's zeolite ion-exchange sorbents as Kane's inking material, since beads as inking material is conventional, as is also zeolite as ion-exchange sorbent for radionuclides.

One of ordinary skill in the art would have been motivated to use zeolite beads to incorporate radionuclides into printer inks, since zeolite is well known in the art as having a large absorption capacity.

► Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. as applied to the previously rejected claims 10 or 15, except the recitation of a low-level radioactive tag. Low-level radioactive tag is essentially the same as containing radionuclides that are not practically detectable recited in the previously rejected claims 6 and 50 under § 103 over Kane et al. alone, as a single prior art. Claim 29 is therefore rejected over Kane et al. in view of Westinghouse Savannah River Company website publication and/or Bostick et al.

► Regarding claim 30, the limitation that the tagging method comprises (the step of) affixing the (radioactive) label to the object is disclosed by Kane et al. in Col.9/II.59-62.

► Regarding claim 31, the limitation that the tagged object comprises something which is often counterfeited is disclosed by Kane et al. in Col.1/II.47-50.

► Regarding claims 32 and 33, the limitation that the objects to be tagged comprise currency is disclosed by Kane et al. in Col.4/II.54-67 and Col.10/II.21-25; that they comprise documents (including computer output documents) is disclosed in Col.10/II.59-68 and Col.11/II.1-9.

■ Specifically regarding claim 33, insofar as the Examiner can ascertain in the claim upon obviation of the above rejections under 35 USC § 101, the limitation that the

objects to be tagged comprise computer output, which is no other than documents, is disclosed in Col.10/II.59-68 and Col.11/II.1-9.

■ Examiner's Note: Computer software by itself (claim 33) is an abstract idea that cannot possibly be tagged.

► Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. as applied to previously rejected claims 31-33 above, except the recitation that the tagged object includes a work of art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to tag a work of art, e.g., with owner's logo, in order to serve as a proof of original ownership in case of a theft.

► Regarding claim 57, the limitation that "the approximate date of emplacing the tag is determinable by measuring the decay of one or more radioisotopes of precisely known quantities and half lives" is inherent in Kane's, as recited in Col.7/II.29-68, especially in the formula given in Col.8/II.1-11, Col.7/II.29-68 and Col.8/II1-11.

18. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. in view of Barrett-235, as applied to the parent/base claims 19 and 13 above, and further in view of Gullberg et al. (USAPT # 5,841,141).

Kane et al. as modified by Barrett-235 disclose all the limitations of claims 20-22 as applied to the respective base claims 13 and 19 above, except the limitations of

using a modern strip gamma-ray detector, a Compton gamma-ray imaging detectors, or using gamma-ray tomography,

Gullberg et al. disclose in Fig. 1 and Figs. 2A & 2B a gamma imaging system for detecting radionuclide *distributions*, as disclosed in Col.1/II.18-20. Gullberg's gamma detecting system is based on a modern strip gamma-ray detector, i.e., one dimensional detectors 30a and 30b, as disclosed in Col.3/II.60-64, while making use of the Compton effect, as disclosed in Col.1/II.58-67, Col.2/II.1-67 and Col.3/II.60-67 & Col.4/II.1-4 as well as in other parts of the specification. Gullberg's gamma camera is basically a computer tomography imaging system capable of imaging a three-dimensional distribution of gamma emitters, as recited in Col.3/II.28-31, Col.7/II.65-67 and Col.8/II.1-10.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a Compton gamma imaging system such as Gullberg's to detect a *distribution* of gamma emitters, such as two-dimensional signature logos and three-dimensional signatures, since it is well-known in the art that the Compton effect can be utilized to determine the direction or angle of a gamma emission and simultaneously its wavelength, as disclosed by Gullberg et al. in Col.4/II.5-20, thus obviating the need of high spectral resolution detectors.

It would have been further obvious to a person having ordinary skill in the art at the time the invention was made to use Gullberg's Compton camera, since it can be used for conventional SPECT tomography, as specifically recited in Col.3/II.28-31, and

is therefore capable of imaging low-level gamma source distributions, so low as not to harm human body, as required by Kane et al. in Col.3/II.35-40.

Suggestion to use a difficult-to-counterfeit logo to tag a valuable or genuine product is implicated by Kane et al. in Col.1/II.50-60.

19. Insofar as the Examiner can ascertain in the claim upon obviation of the above rejections under 35 USC § 112, 2nd paragraph, claims 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kane et al. in view of Myron.

Kane et al. disclose all the limitations of claims 23 and 24, except the limitation of using a high-energy radioactive ion beam with characteristic distributions of energy (claim 23) and direction (claim 24), such that -- as a result of the stopping power of the implanted material -- the implanted radioactive ions have a specific distribution that serves as a three dimensionally extended radioactive tag.

Myron discloses a method of ion beam implantation that results in a **controlled implant distribution**, as recited in Col.1/II.6-10, 24-26, and 39-43. The fact that Myron uses his method to make the distribution more uniform does not at all teaches away from Applicants' invention, since Applicants do not specify the unique ion distribution being claimed. An **uncontrolled** ion implantation would certainly result in a non-uniform implant distribution, such that Myron's uniform distribution can certainly be considered as a unique distribution, thus anticipating the limitations of claims 23 and 24.

Furthermore, Myron's implantation method is controlled, and thus may be used to produce any implant distribution as desired, and not just a uniform one. Thus, Myron's

method is capable of implanting ions, including radioactive ions, to generate any unique distribution desired to form a unique signature desired, uniform as well as non-uniform.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use Myron's controlled implantation method to implant radioactive ions with a unique implant distribution profile, since the latter is a 3-dimensional logical extension of a 2-dimensional logo pattern that would further enhance the uniqueness.

One would have been motivated to make a 3-dimensional tag, since it is quite obvious to every one not necessarily skilled in the art that a unique 3-dimensional logo is more difficult to counterfeit than a 2-dimensional logo, and is *much* more difficult to counterfeit than a simple spot-like tag, whereby the unique spatial distribution may substitute an isotopic/spectral constituents, or even added on top of a unique isotopic combination to enhance its uniqueness.

Response to Applicant's Arguments

20. Applicant's arguments filed 01/14/2003 (Paper #8/a) have been fully considered, but are not persuasive. The following is Examiner's response to Applicant's arguments.

(a) 35 U.S.C. § 102 Rejections

► Regarding claims 1, 13 and 45, in addition to the Examiner's Response to Wood's arguments, Applicant's specific argument that Kane et al. do not control the quantity of

each radioisotope as recited in Applicant's claims 1, 13 and 45, is not considered persuasive, because:

- (a) all Applicant's limitations are covered by Kane et al. in Col.7/ll.31-35, Col.7/ll.29-36, Col.7/ll.39-41, Col.7/ll.29-68, Col.7/ll.40-44 and Col.8/ll.1-11, as already applied in the 1st Office Action;
- (b) Applicant's referral to Kane's Col.3/ll.63 through Col.4/line 1 and Col.4/ll.26-33 is fully misplaced, since these columns & lines have never been used or recited by the Examiner.
- (c) Applicant's referral to Kane's Col.7/ll.31-36 (as applied by the Examiner) is not persuasive, since Applicant is also doing the same. It is impossible to collect and measure all gamma photons emitted in 4π radian solid angle, so only a fraction or relative amount is actually measured. To obtain an absolute number of counts as needed to achieve a desired level of measurement error is not necessarily to be controlled by the absolute amount of the individual isotopes as argued by Applicant, but can be as well established by controlling (i.e., increasing) the counting time.
- (d) Regarding Applicant's statement, "*This is a very highly idealized statement, one far removed from the real world of **gamma ray spectrometers of acutely finite size and remarkably non-isotropic response**, which however are **the detectors addressed in the present invention***" it is noted that those limitations argued by Applicant (highlighted in bold italics) are not recited in the claims. Although these elements may be found as examples or embodiments in the specification, they were not claimed explicitly. Nor were the words that are used in the claims defined in the specification to require these

limitations. A reading of the specification provides no evidence to indicate that these limitations must be imported into the claims to give meaning to disputed terms. Therefore, Applicant's argument is not considered persuasive.

(e) Regarding Applicant's argument that Kane et al. do not encode digital information, it is to be emphasized that Kane's Col.7/II.39-41 recites that the information is recorded in digital form ("recorded digitally in a MCPA"). This, in combination with an "encoding" recited in Col.8/II.42-45, anticipates Applicant's claim limitation by virtue of inherency. Please also read the above Response to Wood's Declaration.

- Under these considerations, the previously applied § 102 rejections of claims 1 and 45 are proper.

- Claim 13 recites the limitation of a detector-and-collimator arrangement, which is not inherent in Kane's. Therefore, claim 13 is changed into a (NEW) § 103 rejection over Kane et al. in view of a secondary reference, Barret-235 (USPAT # 6,392,235 B1).

- ▶ Regarding claims 2 and 41-44, Applicant's request to remove the previous rejections is not granted, because claim 1, on which the claims depend, is rejected. The previous § 102 rejections of claims 2 and 41-44 are herewith reconfirmed.

- ▶ Regarding claims 41 and 58, in addition to the Examiner's Response to Wood's arguments, Applicant's specific argument that Kane et al. fail to teach that the intensity ratio of the two gamma lines, traced back to time zero, should be made equal, is inherent in Kane's Col.7/II.29-31 in combination with Col.8/II.7-11 and Col.8/II.42-45. Furthermore, Applicant's key limitation is the determination of the elapsed time since the

creation of the tag, which is then used to read the encoding from the (time-zeroed) intensity of other radioisotopes, which are not equal in their ratio(s), because then there would be no encoding possible. Therefore, the previous § 102 rejections are proper.

► Regarding claims 43 and 60, the limitation of binary bit-string encoding is inherent in Kane's digital encoding already recited above, wherein the extension to multi-bit encoding being here enabled by state-of-the-art instrumentation, and is already inherent in Kane's invention of a method, which anticipates the use of such state-of-the-art devices. See previous Response to Wood's Declaration. Therefore, the previous § 102 rejections are proper.

► Regarding claims 3, 4, 6-8, 10-12, 14-17, 19, 26, 27, 29-33, 35-40, 44, 47, 48, 50-52, 54-56 and 61, please refer to Examiner's Response to Wood's Declaration. The previous § 102 rejections are proper.

- Especially claims 7 and 51 recite the limitation of binary bit-string encoding, which is inherent in Kane's digital encoding already applied to claims 43 and 60 above.

- Especially regarding claims 11 and 55, the "*automated dispensing*" recited by the Examiner refers to the "*algorithm control*", only in conjunction with, but not to be understood as "*metered out*", which is related to *quantitative dispensing*.

- Specifically, claims 3, 4, 6-8, 10-12, 29-33 and 44, all depending on claim 1, stand rejected, because claim 1 remains rejected.

- Especially regarding claim 33, the limitation of tagging "*media bearing computer software*" inherently includes "*computer documents*", as already applied together with the rejections of claims 32 and 35 in the previous Office Action.
- Specifically, claims **26** and **27** do not depend on claim 23, as insisted by Applicant, but on claim 13. Consequently claims 26 and 27 are rejected under a new § 103 rejection over Kane et al. in view of a secondary reference, Barret-235.
- Claims 14-17, 19, **26**, **27** and 35-40, all depending on claim 13, stand rejected, because claim 13 is rejected under a new § 103 rejection over Kane et al. in view of a secondary reference, Barret-235.
- Specifically, claims 47, 48, 50-52, 54-56 and 61, all depending on claim 45, stand rejected, because claim 45 remains rejected. Therefore, the previous § 102 rejections are proper.

Allowable Subject Matters

21. Claims 11, 14 and 55 have been identified as containing potentially allowable subject matters, i.e., if the following two conditions can be met:

- (a) properly emphasizing the unique and novel capability of writing or printing radioactively encrypted messages in real time using state-of-the-art computer ink-jet printing technology, and
- (b) rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. Claims 23 and 24 have been identified as containing potentially allowable subject matters, i.e., if the following two conditions can be met:

- (a) properly emphasizing the unique and novel capability of ion-implantation method to produce 3-dimensional logos, and
- (b) obviating a persisting confusion between ion implantation depths and stopping power for gamma ray penetration.

23. Claim 22 reciting gamma-ray tomography has been rejected also because of being dependent upon a rejected base claim 13, but would be allowable if rewritten as being dependent on claims having allowable subject matters, i.e., claims 23 and 24 reciting three dimensional logos.

Allowable Subject Matters

if New Matter can be removed or avoided

(a) Claim 13 reciting a detector-and-collimator arrangement can be considered as an allowable subject matter, if a typical arrangement is technically described in the specification. This, however, would fall into the category of New Matter. The only way out is therefore, to abandon the present application and resubmit a new one with a technical description of a typical detector-and-collimator arrangement sufficient to make the limitation a subject matter of Applicant's invention.

(b) Claims 6 and 50, reciting the use of HR room-temperature fieldable gamma-ray detector, such as CZT, can be considered as an allowable subject matter. So far, such an introduction would fall into the category of New Matter. The only way out is

therefore, to abandon the present application and resubmit a new one with a technical description of a typical HR room-temperature fieldable detector arrangement that is sufficient to incorporate the limitation as a subject matter of Applicant's invention.

(c) Claims 5, 9, 49 and 53, reciting the use of error-protection code containing a Hamming-error syndrome can be considered as an allowable subject matter, if the uniqueness or novelty of Applicant's error-protection code in comparison to any error-protection code can be demonstrated. So far, such an introduction would fall into the category of New Matter. The only way out is therefore, to abandon the present application and resubmit a new one with a technical description of a typical CZT detector arrangement sufficient to incorporate the limitation as a subject matter of Applicant's invention.

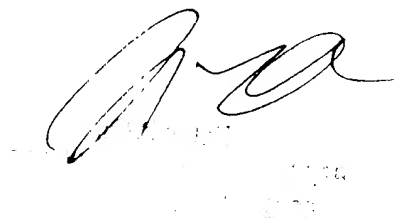
24. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 703 305 0149. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 703 308 4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9318 for regular communications and 703 872 9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

bes
March 3, 2003



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